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OSCILLATING CONVEYOR TECHNOLOGY

A screen is not always the same as a screen!

... or which ROSTA suspension matches which type of screen?

Feeding chute for mobile crusher mounted on AB-D 50-2

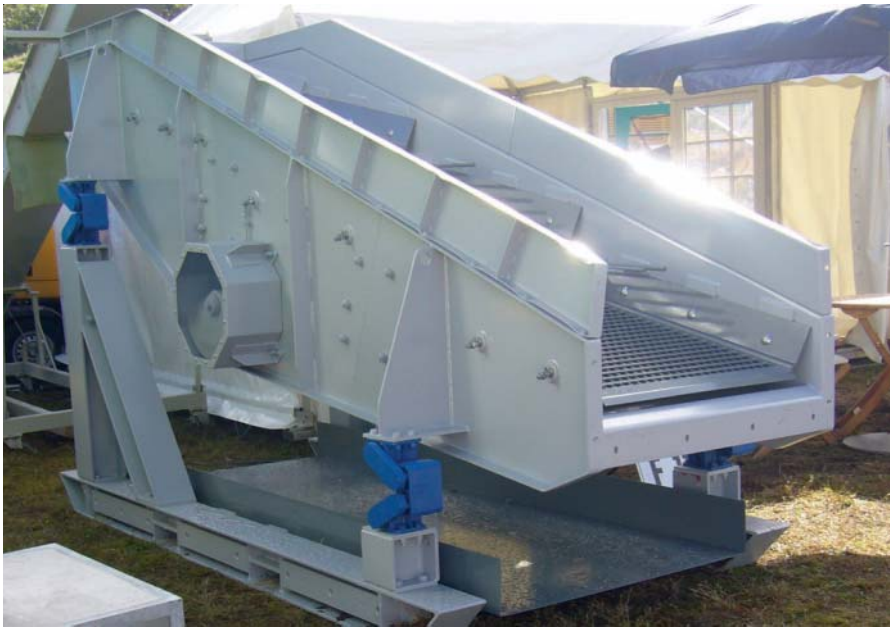
screening suspensions are considerably higher than for **continuous** charging from a conveyor belt or a chute.

Pure **feeding chutes** to mobile crusher units, for example, are almost always charged spontaneously, and possibly also filled to the brim, which causes the highest possible loading of the elastic suspensions.

The following double page provides information about the functionally correct arrangement of the ROSTA screen suspension **types AB, AB-HD** (**H**eavy **D**uty) and **AB-D** for each kind of screen. The presentation makes no claim to be comprehensive, of course, but does cover 90 % of current screening machines. In case of the suspension of „Niagara" or „Banana screens", for example, it is recommended to consult ROSTA directly.

ROSTA AG offers a total of three different types of screen suspensions on the market. These oscillating mountings with slightly differing concepts are designed for the respective function or the specific utilisation of screen or conveyor units, and offer the highest customer benefits if they are used in practice in accordance with their intended function.

The processing that is carried out using a **circular vibratory screen** is different from that using a **linear vibratory screen,** for example. The criteria for the selection of a suitable vibratory suspension system are thereby different and should be taken into consideration when designing the screening unit. If a linear vibratory screen is charged using the so-called **spontaneous charging** using a loading shovel, the requirements on the

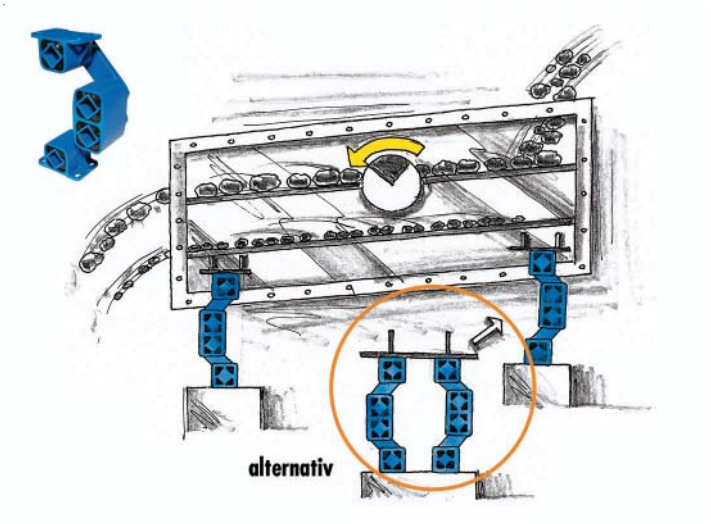


Circular vibratory screen suspended on the AB 50 mounts

Circular vibratory screens

or circular vibrators are normally excited by an unbalanced weight that creates a circular rotating oscillation of the screening frame. Relatively low accelerations of the screened material are achieved with this form of excitement. Circular vibrators thereby normally work with a screening frame inclination of 15° to 30°, so that an adequate material throughput is ensured.

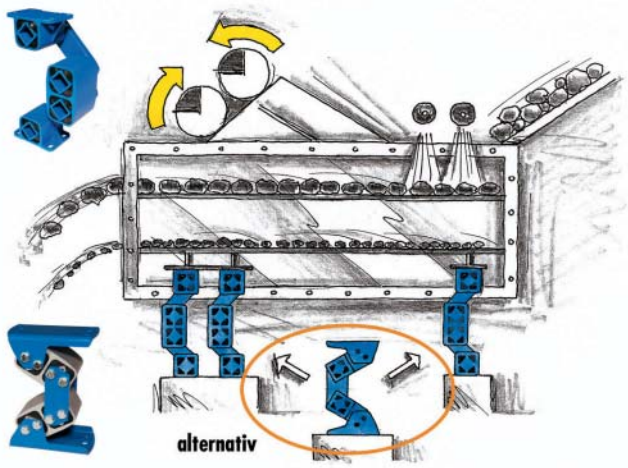
It is recommended to mount circular vibratory screens of this kind on ROSTA **type AB** oscillating mountings. Experience has shown that the positioning of the AB suspensions under circular vibrators should be a mirror-inverted of each other, which, with the above-mentioned frame inclination, will counteract the tendency of the shifting of the centre of gravity. If the suspension of the screening frame requires two supporting suspensions per brace support for reasons of capacity, these should also be preferably arranged in mirror-inverted manner for the above-mentioned reason.



Linear vibratory screens

or linear vibrators are normally excited by two unbalanced motors or by means of linear exciters, as well as through double unbalanced shafts (Eliptex), which generate a linear or slightly elliptical oscillation of the screening frame. Depending on the inclination positioning of the exciter, the angle of throw of the screened product can be adapted to the desired form of processing. A very high acceleration of the screened product, i.e. a higher material throughput, is achieved with linear vibrating screens. The screening box of the linear vibrator is normally in the horizontal position.

Linear vibrating screens are preferably mounted on ROSTA oscillating mountings **type AB.** Depending on the positioning of the exciter on the screening frame, the feed-end/discharge-end load distribution can be different. The feed-end side is normally lighter, as the exciters are positioned close to the discharge-end and thereby pull the material through the screening frame; in many cases, the feed-end/discharge-end distribution is thereby 40 % to 60 %. In the interest of an even suspension, it is thereby recommended to mount the screening frame on six or more ROSTA oscillating mountings (see also **Combination Possibilities**). All **type AB** oscillating mountings should stand in the same direction, with the „knee" pointing in the discharge-end direction. For the suspension of linear vibrators with low oscillation amplitude (for permissible **amplitudes,** please refer to the ROSTA Oscillating Mountings catalogue), the very cost-efficient **type AB-D** oscillating mounting can also be used; ideal cost/carrying capacity ratio.

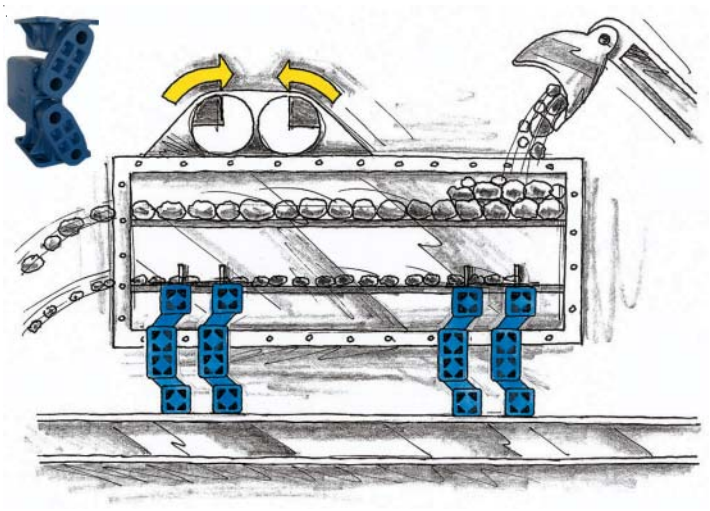


Combination possibilities:

As the **AB 50** types **(AB 50, AB 50-2, AB 50 TWIN** and **AB 50-2 TWIN)** have the same arm lengths and thereby the same element geometry, these four types can be combined with one another depending on the support load per screen box corner. The natural frequency of the four oscillating mountings mentioned above is the same. Load carrying capacity: **AB 50** = 6,000N, **AB 50-2** = 10,000 N, **AB 50 TWIN** = 12,000 N and **AB 50-2 TWIN** = 20,000 N.

Linear vibrating screens with spontaneous charging and capacity peaks:

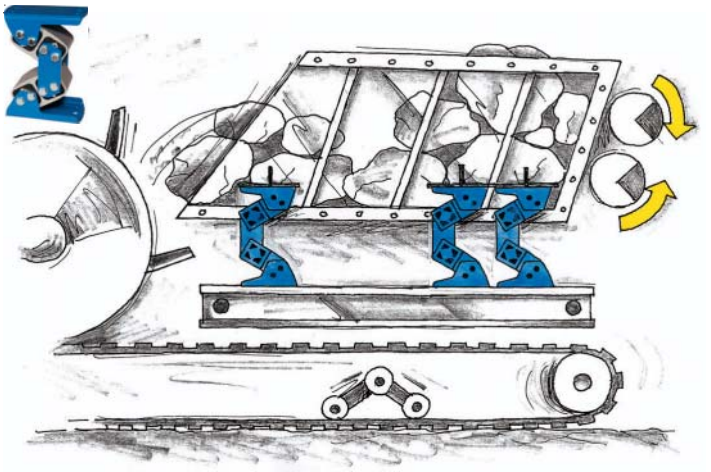
Linear vibrators with spontaneous charging und periodically occurring capacity peaks are mainly found in the coal and mineral processing industries, where charging is often carried out spontaneously with loading shovels (high impacts on the feed-end side) or where daily or weekly capacities can be different (e.g. a 600 ton screen should produce 800 tons per hour in peak periods).



The installation of the ROSTA type **AB-HD 50-2** (**H**eavy **D**uty) oscillating mountings is recommended for these types of screens. The installation sizes are almost identical with those of the standard **AB 50-2** types, but the specific lever position of the connecting rocker suspensions between the individual ROSTA elements leads to a higher load-bearing capacity of the suspension. The resulting lever arm is shorter, which leads to a better utilisation of the element torques. At the same time, however, the downward deflection is less, which slightly increases the natural frequency of these vibration suspensions (2.8 Hz instead of 2.2 Hz). A somewhat higher suspension (+ 30 mm) and a slightly „poorer" isolation effect are exchanged for +40 % more load-bearing capacity with the same element size. The selection of the number of AB-HD oscillating mountings must be based on the maximum possible load at peak capacities or during the charging impact.

Charging feeders for mobile crushers:

These are mainly linear feeders that are normally excited by means of two unbalanced motors. They transport bulk rock material or building rubble to the crushers in measured quantities. These feeders or material bunkers are mostly charged spontaneously, and the drivers of the loading shovel frequently fill them up to the top brim. The resulting oscillation amplitudes are normally not very large; 8 up to a maximum of 10 mm amplitude is sufficient for the measured material transportation of bulk goods.



The installation of the ROSTA type **AB-D** oscillating mountings is recommended here, which offer a very cost-efficient procurement costs : carrying capacity ratio. Due to the considerably shorter rocker arms between the individual elements, the permissible oscillation amplitudes are limited = amplitudes 8 up to max. 12 mm here, depending on the exciter frequency (for permissible amplitudes, please refer to the ROSTA Oscillating Mountings catalogue).

The **type AB-D** oscillating mountings should stand in the same direction, with the „knee" pointing in the discharge-end direction. Here also, in the interest of an even suspension, it is recommended to support the feeder trough on at least six or more oscillating mountings corresponding to the position of the centre of gravity (see also **Combination Possibilities**).

The same combination possibilities are also offered by the three models of the **AB-D 50** size: **AB-D 50** = 9,000 N, **AB-D 50-1.6** = 12,000 N und **AB-D 50-2.0** = 16,000 N.

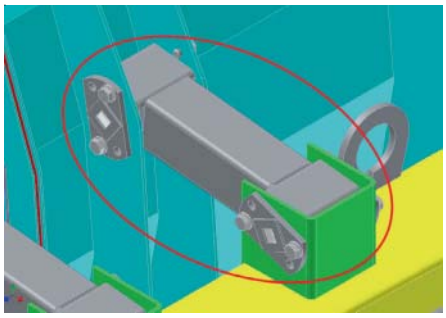
As the **AB-HD 50-2** has a different construction geometry, it cannot be combined with the other four AB 50 types. On this occasion it is once again pointed out that combinations of, for example, AB 45 (at the feed-end) with AB 50 (at the discharge-end) are not recommended, because the construction geometry of these two types are not identical and different oscillation behaviour could thereby occur.

Snow clearance at airports!

The Øveraasen company in Norway is a leading manufacturer of snow clearance systems. It has been manufacturing snow ploughs since 1923, and is specialised above all in clearing snow from the runways at airports. Most airports in the northern hemisphere use snow clearing equipment from Øveraasen.

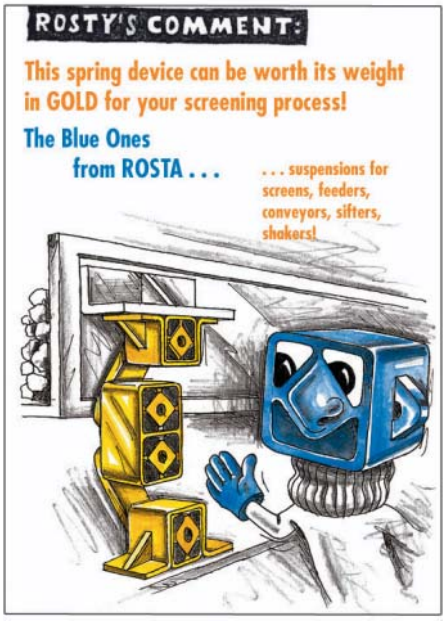
Snow clearance at major airports always takes place under enormous time pressure. Wherever possible, the take-off and landing runways must be cleared „black", i. e., no residual snow must remain lying on the runway.

The Øveraasen runway clearer ploughs the snow to the side, and the remaining snow is then brushed away and the surface of the runway is dried with blowers. As a result, the use of chemical agents can be very heavily reduced, or can be avoided completely, which benefits both the environment and the sensitive aircraft components made from light metals.



Thanks to the use of these high-tech machines, it is possible to clear the snow from a 3,500 x 20 metre runway in 10 minutes. A snow plough thereby clears the runway over a width of up to 5.5 metres.

In order to ensure the high efficiency and low energy consumption of the subsequent brushing and blowing, the preceding snow plough operation must push as much snow as possible away from the runway. The plough will thereby be almost in direct contact with the runway, and that at speeds of up to 65 km/h! This places high demands on the suspension of the plough blade. Uneven areas of the runway, such as concrete joints or shaft covers, result in massive impacts on the plough blade, which is divided into individual segments with a width of 915 mm each. Each segment is supported by 8 ROSTA rubber suspension units of the Type DR-S 45 x 100 in the shape of a parallelogram in order to dampen the impacts and to apply an even pressure to the runway.



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